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CONTENTS

ELECTRIC POWER

CONSTRUCTION CONTINUES AT AZERBAYDZHANSKAYA GRES

Baku VYSHKA in Russian 11, 14 Aug 81

[Article by A. Gamedov: "The Rhythm Has Been Set"]

[11 Aug 81 p 2]

[Text] Some speak with significance: "We are like Columbus." Others explain it more simply: the boiler at the Azerbaydzhanskaya GRES is being installed in open assembly, and there is much that had not been foreseen. In both interpretations, however, there is the pride of these trailblazers and the complexity in executing the assembly operations.

This boiler is a prototype, the first sample of a series planned for production. It differs favorably from the units at other thermal stations. Its novelty lies in the fact that it is not installed within the building, but out in the open air. Naturally, the originality of this arrangement has made it possible to incorporate in the design such changes as will allow the unit to be maximally economical.

The assembly of such a boiler, however, is much more complicated. When it is installed within the building, overhead cranes are set up along its sides and then assembly is carried out in the customary manner, according to a long-familiar scheme. Here there are no overhead cranes. During the course of things it is necessary to "learn" the new assemblies, "discover" methods of installation and adjust to the habits of a new crane. No more and no less than 4,000 tons of previously assembled units must be raised to a height of more than 50 meters, and 10,000 joints must be welded. Think about it and worry a bit, installers, once again master the science of installation and do everything reliably with an eye to the long years ahead. As they say, once you strike up the song, you have to sing it to the end.

This is what was hidden behind the familiar words "open-type boiler." To be sure, it will cost the State less if there is no brick building over the boiler. In this case, however, the labor expended in installing the boiler increases by approximately 20 percent. Consequently, even more people will be needed, but where can you get them? We will have to get by on the number of specialists we now have. Moreover, the boiler installers together with other collectives of GRES builders have taken it upon themselves to put the first power unit on line three months ahead of schedule. Have they spoken too soon? What were they hoping for? What reserves will be brought into play to hurry things along?

The boiler is like a tall multistory building. It is all covered with people. Sometimes they appear from somewhere out of the depths of the pipeline network, sometimes they disappear behind the white walls of the "floors." Sitting in the cabin of his crane, G. Suleyman shouted, pointing to a rigger in a blue shirt and red helmet.

"Agazay is coming down, and now we will lift him up."

Seeing him, chief engineer V. Itskovich of Kavkazenergomontazh, the leading installation trust on the GRES construction project, also began to speak:

"I often ask team chief Agazay Aliyev, 'What kind of help do you need?' He is brief and specific. 'Put some pressure on the foremen so that they always have corrected drawings at hand and so that the delivery of assemblies is organized more efficiently.' That is all! The team chief does the rest himself, dividing the team into groups, placing people depending upon the operation to be accomplished and monitoring the work of the night shifts."

"Well, how is it going? Have the foremen caught up yet?"

"They are trying. Do you see that large panel attached to the main building, filled with pipes? That is the so-called boiler screen. Incidentally, it is the last one, and Agazay is going down for it. Today the boiler will finally be closed off on the outside. This operation has dragged on for months. Now it is being completed."

While we were talking, Agazay went down, said something to the crane operator, went up to the side screen which had been prepared for the lift and checked the lashing and the straps that the riggers would use to insure the lift. Then he twirled his hand over his head. This was the command to the crane operator to lift the head portion of the screen. The cables pulled tight, iron creaked, the screen rocked and reluctantly separated from its supporting framework. Then, accompanied by the rigging, it began floating up slowly, blocking off the sun for us. It was necessary to raise it to the very top of the boiler and then lower it to the spot where it would have to cover the side of the boiler, now open like a dark chasm. This is a new method, used for the first time by Agazay Aliyev's work crew.

Strictly speaking, under the given conditions, there was no alternative. The fact of the matter is that other work crews competing to assemble the boiler ahead of schedule had installed the pipes and steel structural members without waiting for all the cranes to be installed. Now the pipes interfered with the installation of the sides of the boiler.

Of course, this is not to be taken as some work teams stepping on the others. On the contrary, everything was done after being considered and coordinated. Aliyev found a way to carry out the assembly without interfering with the others.

Now the screen moved slowly along the set route, and the work team had found a few minutes to converse. We walked up to the supporting framework. Agazay pointed out the places that had turned blue from the flames of the electrodes. Here they had cut out the attachment points which had interfered with the rapid detachment of the assembled screens on the construction platform in order to lift them.

The new attachment points were suggested by the riggers themselves. Previously, the raising of one side had taken almost eight hours, but now it takes less than two.

We talked about the two innovations of Aliyev's work team. Other collectives have also made finds. V. Beliyev's work team, for example, did not take to waiting for the arrival of gussets (corner plates). Welder M. Efendiyev cut them from steel plate, and the installation of metal structural members was not delayed.

The turbine specialists are moving out ahead of the other workers.

"The turbines are 80 percent covered," said G. Irlyk, rigger team chief from the Nevinnomysskoye Installation Administration. "All that remains is the installation of one generator. We will soon put the entire system into gross turnover. There will be current."

The installation workers have found an optimal work arrangement for themselves. One shift works from eight in the morning to seven at night. The other works from seven to five. The psychological aspect was considered here. The long impending night shift was wearisome for the installation workers. Observations had shown that there were not enough workers for the entire night shift, the people could not tolerate the load and, after five o'clock, many tried to find a place to sleep, like it or not. Would it not be better if they had official permission to work only until five o'clock, once they had attuned themselves to an efficient level since the evening hours? Let them sleep in their own apartments, in their own beds, and not here and there among the pieces of steel. It proved to be better. They decided to do this, and the indicators improved.

The pulse of the construction project beats intensely. F. Mamedov's Komsomol work team from the GRES Construction and Installation Administration regularly fulfills two quotas per shift. They have now shifted over to the construction of the trenches through which the cables and drainage pipes will run. Working conditions were difficult. The excavator dug the trench all night long. The work team came along behind. At dawn it became clear that there would not be enough gravel, concrete and facing slabs. The work team chief called the concrete plant and the Industrial and Technical Supply Administration. In about 15 minutes vehicles arrived with the necessary materials.

The level of efficiency is enviable, to be sure. How has it been achieved? As it turns out, before the work team made an appeal for double the quota daily, it concluded an agreement for integral competition with work crews from the concrete plant and the supply administration. Each side made commitments to the other, and they are now trying to conscientiously fulfill them. The agreement works reliably.

Lunchtime had arrived. Two food lines opened up simultaneously under the large colored umbrellas and awnings. Those who wished to could buy pasties, sausage, hard-boiled eggs, yoghurt, sour cream, lemonade and mineral water. A bus was provided for those who wanted a hot meal. There were complete meals and ala carte dishes at the base dining facility.

In addition to these food lines and the dining facility there is another form of service for the builders. The food service attendants ride right up to the work place on motor scooters and conduct a brisk business in pasties and mineral water. The mechanized canteens have become popular. In addition to all of this, carbonated cold salt-water dispensers have been installed at specific locations. For those who work on the night shift, tomatoes grown on the subsidiary farm of the Construction and Installation Administration are handed out without charge while food prices are reduced by half.

All of this is a result of the concern for the builders and the growing attention to their needs.

"The issue of nutrition has been taken off the agenda," they said at the party gorkom. "Everything required for normal operation is being provided to the GRES builders first of all."

Many fine changes took place here after the resolution of the Azerbaijan Communist Party Central Committee in which approval was given to the initiative of the participants in the Azerbaydzhanskaya GRES construction to commission its first generating unit ahead of schedule. To be sure, the resolution set a more precise rhythm for the construction project and disposed the people to selfless, creative labor. Here and there on different sections of this great project there arise new ideas about the standards and methods of work which break down the usual conceptions. Supported by party organizations, this resolution is becoming a dynamic force which predetermines new successes. This is where the high indicators are coming from. The seven-month construction and installation plan has been exceeded by 146 percent.

For any construction site, however, we can put it thusly: it is a peculiar mystery. High indicators are not always identical to the actual state of affairs. At the same time, each job is only good when it is completed. Therefore, we look at the facilities of the first power unit from the point of view of preparing them for start-up. We will speak about this in the next letter.

[14 Aug 81 p 2, "Cause for Alarm"]

[Text] In the van at the construction site headquarters hangs a schedule announcing that 25 installations have been turned over for service in June. All of them had been accepted, four of them exactly according to plan. Everything on the chart was done clearly and in color with the dates indicated.

The first on the list was the fuel oil industry. Here is where we began to acquaint ourselves with the facilities which had been accepted.

"Do not be in a hurry to congratulate us," said shop manager D. Masimov, spoiling our mood. "I will now show you something."

He brought us a five-page report of deficiencies. We read the document: "The rails have not been laid; the vertical layout and the concrete foundations under the main pipeline have not been finished; 52 valves and vents in the level regulator have not been installed." In this report, 37 items began with the words "not finished" or "not installed."

We addressed Masimov. "How many deficiencies were corrected in the last month after the report had been drawn up?"

"Five."

"How much time and how many men will be required to eliminate the remainder?"

"Approximately 16 men must work for no less than a month," announced the chief engineer of Kavkazenergomontazh, V. Itskovich, making a mental estimate.

Taking the report with us, we went to see V. Churbanov, manager of the Kavkazenergomontazh trust, who was making a routine trip to a GRES construction site.

"Like an illegitimate child, this report is poorly timed and incorrectly formed," said the manager, looking at the document. "I, for example, am seeing it for the first time. It does not specify the number of personnel necessary to carry out the tasks nor the time periods involved. We held a project meeting, and many of our managers from installation organizations had to listen to criticism. Indeed, there was so little time left before start-up and yet so much to do! We had to say outright that some of our managers were drinking tea and saying nice words to one another.

These managers did not fully feel a sense of responsibility for the facility."

"The fault here belongs first of all to the client," said Itskovich, joining in the discussion. "We have come to the stage where the client has to make severe demands on the general contractor and the subcontractors, pestering and worrying them, not giving them any peace."

"Do not the stringent demands reveal the defects in the work and in your people who did the installation?"

"Correct. It is not too late. We must discover the defects more quickly in order to eliminate them in time. This is what I worry about."

We will cite one example supporting the criticism directed at the installation managers. The Apsheronskoye board where A. Osipov is department chief was given the task of completing the installation of equipment in the chemical purification facility. This is a complicated assembly. It seems as though it was conceived of as an embodiment of the latest word in science and technology. The cleaner the water entering the boiler, the smaller the amount of fuel required to turn it into the steam which will be used to rotate the turbine. In short, the work of the installers is very complicated and crucial.

"We did our job," said A. Osipov. "Let the client accept it."

"The client's work commission has already come to accept it. The report was drawn up and many remarks were made."

"However, I never saw the report."

Now is the time to discuss the work commission. It has considerable rights and duties. In addition, its responsibility is great. In fact, it determines the facility's degree of readiness, its degree of completion and its ability to operate. It imposes a number of demands, the fulfillment of which guarantees the commissioning of the first power-generating unit.

The work commission, headed by I. Ashurov, chief engineer of the GRES construction board, was formed by the client long ago--the order was signed on 7 February. Unfortunately, deviations from construction standards and regulations were allowed from the very beginning. What we are speaking about here is the competency of the commission which had been formed. Although its chairman, I. Ashurov, attended a fine training school at the Ali-Bayramlinskaya GRES imeni Il'ych and worked at many jobs, he cannot be as well versed in all matters as any technical supervisor. This always is the case everywhere. For this reason, the construction norms and regulations must include on the work commission representatives from trade-union technical inspection teams, from State sanitary inspection organs, from fire inspection teams, from design organizations, etc. Local commissions can be formed to inspect separate, complex subfacilities. None of this has been done.

The existing commission in its truncated form, however, operates incorrectly and reticently, and its activity has almost no effect. For six months it tried to accept or inspect just two subfacilities and has not been able to conclude this work. Why should the deficiencies have been discovered and recorded at that time? Why, the first precept of the work commission should have been actively directed at eliminating defects. It is created chiefly to draw attention to incomplete work in a timely fashion, that is, long before the equipment is scheduled to begin operation. Subsequently, the commission must unremmitingly seek to eliminate these deficiencies within the established time frame.

The managers of the Kavkazenergomontazh trust were correct--there can be defects, and it is important to spot and eliminate them. This is how facilities are to be prepared for turn-over to the State commission and for start-up.

The role of the general contractor--the management of the Azerbaydzhanskaya GRES Construction and Installation Administration and the Azenergostroy trust--is very passive in this matter. The chief of the Construction and Installation Administration, A. Agayev, is on the construction site for days on end with no time to sit. The construction site supervisor, however, has other important duties dictated by the present stage of construction of the first power-generating unit. He must determine the degree of readiness of the subfacilities and make timely reports to the work committee. Incidentally, this is what A. Agayev did one time: he sent a telephone message to the board of a GRES under construction, asking them to inspect a number of facilities. On the basis of the telepone call, these facilities were marked on the schedule. In actuality, however, no one had examined them properly.

During active, crucial times construction work resembles the advance of troops on the front. The commanders of the advancing units always strive to bring their command points closer to the front lines where the fate of the battle is decided. It is one thing to create diversions and invite the production commanders to meetings in the van; it is another thing to be at the sites more frequently, to see everything with your own eyes and to resolve many issues right there on the spot. When the responsible officials are on the "front lines" more often, the other managers follow their example. At the present time, however, it is very difficult, almost impossible, to find superintendents and administration heads at a construction site!

Indeed, this is also reflected in the amount of work done and its quality. The facts mentioned are confirmed by the number of defects and incomplete work discovered by the work commission, even though the commission, as we said before, is operating at far from full strength and is inconsistent.

In the main building, the central control panel is in a semifinished state. Its location is ideal for the superintendent who wants to keep his finger on the pulse of the construction site. From here one can see everything, everyone working side by side. Any of the managers can locate his "command post" there--the director of the GRES under construction, S. Lyatifov, the director of the Azenergostroy trust, R. Gamidov, or someone else.

The pulse of the construction site still does not beat evenly. The main building, by the way, still has not been painted (the equipment, however, has been installed) and innumerable assemblies, mechanisms, metal structural members and reinforced concrete pieces are piling up. Things have not been straightened up since the day when installation began. The heat-flow panel which is being installed is not protected, even though its mimic flow-chart is easily damaged. Any piece of iron falling by accident could put it out of commission for a long time. Other delicate and vital control panels and the inputs to them are likewise not protected against similar hazards.

Construction is proceeding slowly on the temporary smokestack, the process water supply, the engineering and general services building, the lubricant and reagent systems, the forced-draft installation and many other facilities included in the operational system of the first power-generating unit.

Consequently, despite the high overall indicators, delays have been found in a number of sectors. Builders need their start-up schedule the same way they need air.

"It will come," said A. Agayev, chief of the Azerbaydzhanskaya GRES Construction and Installation Administration.

"We are now coordinating the extent of the work to be done and planning the operations which have top priority."

"The course of preparation for the start-up of the first power-generating unit is being discussed at the gorkom office," announced V. Guseynov, chief of the GRES construction management headquarters and chairman of the gorispolkom. "It has been decided that a third shift will be formed and it has been recommended that the party committee for the construction site listen to construction chief Agayev and chairman of the work committee Ashurov on matters relating to expediting the turn-over of installations that are ready. New methods are being introduced for calculating the results of socialist competition over the decades. Preference will be granted to those collectives which exceed their assignments during three-shift operation and which turn over their completed work on time or ahead of schedule.

The GRES is a construction project of the 11th Five-Year Plan. The extensive commitments associated with commissioning the first 300,000-kW power-generating unit three months ahead of schedule stir not only the builders but also those who deliver the materials and equipment--the collectives of the Leningrad and Taganrog plants. They have found it possible to ship the boiler, turbine and generator ahead of schedule. Thus they have created practicable conditions for carrying out these commitments. Everything else depends upon the builders and installers. Their leaders must conduct business, foreseeing the situation up ahead, concerning themselves with tomorrow today.

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ELECTRIC POWER

CURRENT OPERATION OF INGURI GES DESCRIBED

Tbilisi VECHERNIY TBILISI in Russian 20 Mar 81 p 1

[Article by A. Kokrashvili: "The Incredibly Beautiful Land of 'Elektro'"]

[Text] In this building at the junction of Pushkin and Baratashvili streets in Tbilisi beats, figuratively speaking, the electric heart of Georgia. Here is where Gruzglavenergo is located, the place from which the republic's entire power system is controlled. Opposite the large modern building of Gruzglavenergo are the delicately drawn balconies of the homes in the poor section of old Tbilisi. It is as if the age of the present and the age of the past are standing face to face, looking upon one another with astonishment.

Indeed, it is not by chance that this corner of the capital of Georgia has become one of the most notable scenes on the traditional yearly holiday of Tbilisoba. Candles which have been lit for an exotic effect burn on the old balconies. Above this whole area, above the entire Georgian capital, glitters a gold mine of brilliant electric lights.

We arrived at Gruzglavenergo on the eve of the day when, for the eighth time in a row, Georgia was to be presented with the challenge Red Banner of the CPSU Central Committee, the USSR Council of Ministers, the All-Union Central Trade-Union Council and the Komsomol Central Committee. It had been won by the republic in the All-Union Socialist Competition based on the totals for 1980. The most important event of the past year in the Georgian power industry was the start-up of the Inguriskaya GES at full rated power. It was one of the crowning achievements of the victorious year for the entire republic. Along with other large-scale electric stations which have unique hydraulic generating units, this station was named in the CPSU Central Committee Accountability Report delivered by Comrade L. I. Brezhnev at the 26th Party Congress.

We had now arrived at Gruzglavenergo in order to acquaint ourselves with the new things that the Inguriskaya GES had introduced into the operation of the entire power system and into the activities of all the republic's power engineers. How do Georgia and its capital feel about this Inguriskaya newcomer? What new tasks and problems has it put on the agenda? What will be its role in implementing the resolutions of the 26th CPSU Congress, particularly in the matter of further improving the generation of electric power in Georgia?

Our guide and company for the trip through the incredibly beautiful land of Elektro was chief engineer of Gruzglavenergo, Yuriy Aleksandrovich Tsagareli, who helped us to get answers to all the questions we posed.

The land of Elektro is the Georgian power system--the most powerful in the Transcaucasus. There are about 60 power stations in operation. In other words, on the average, one station has come on line annually for each year of the Soviet State's existence. The largest of these is the Ingurskaya station. Its five generating units possess the power of 40 Zemo-Avchala Hydroelectric Power Plants. The commissioning of the Ingurskaya GES immediately raised the output of the Georgian power system to 4 million kW. In 1979 and 1980 there was a sudden increase in the system's output which had never occurred in previous years. The scale of power generation became different from what it had been, the most important fact being that the work of the power engineers had been elevated to a new, higher class. The Inguri is a regulating station, and this made it possible to a certain degree to smooth over and mollify the unevenness of power generation in Georgia over the course of a year. The most difficult period is right now: the water reserves accumulated at the beginning of spring are already being used up, and the high waters have not yet arrived at the rivers. The introduction of the Ingurskaya station averted a shortfall in the power system. Tbilisi, like all of Georgia, does not now experience a slump as it did in previous years. When we visited the Central Control Post of Gruzglavenergo, we saw graphically that the output of electric power to the consumers went smoothly. This means growth in industrial production and in agriculture. Television screens light up and the innumerable electric devices that have become part of our lives operate dependably.

The "product" generated by the Ingurskaya GES is sent out along a 500-kV electric transmission line, the same as from the Tbilisi GRES--a large-scale thermal electric station. The construction of this line made it possible to reduce considerably the electric-power losses--by 78 million kWh over the past year. On the whole, Gruzglavenergo had particularly high technical and economic indicators for last year: the cost of the power generated, for example, was reduced by 10 percent and profits rose by 31 percent.

The Ingurskaya GES is serviced on-site by an operational staff of approximately 200 people. Approximately as many were on the staff in the first years at the small Zemo-Avchala GES. The number of personnel will be steadily reduced because remote control and remote mechanics are being extensively employed in practice. The time will come when commands will be sent without human intervention directly from Tbilisi to the power generating sets at the Ingurskaya GES.

The flow of electric power from the Ingurskaya GES is also directed to Azerbaijan and Armenia and into the Krasnodarskaya power system in particular. This power is also intended for transmission over long distances, right up to Rostov and Donets. In order to do this, the 500-kV Ingurskaya GES--Stavropol'skaya GRES electric transmission line is being laid across the Major Caucasus Range. The Inguri's significance in the USSR Unified Power System will be even greater!

The Ingurskaya newcomer is teaching the power engineers to think and act on a grand scale, to employ more fully all the new GES's potentials for economical operation, to look ahead and more boldly advance during the 11th Five-Year Plan and in the period to 1990. It is a weighty contribution which the Ingurskaya GES has made to the overall labor victory of the republic in 1980. May it grow from year to year!

9512
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BRIEFS

CONSTRUCTION OF NEW DAM--Makhachkala--The arched dam of the Miatlinskiy hydrosystem will connect the banks of the Sulak. Its construction began yesterday, and the work team led by G. Voyush earned the right to put the first concrete into the dam's foundation. The Miatlinskaya GES is the third stage in the cascade on the Sulak. It is intended for the integrated utilization of the mountain river's flow. The station with an output of 220,000 kW is being built in a seismically active mountain region. Plans have been made to put the first power unit of the Miatlinskiy hydrosystem into operation in 1983. [Text] [Moscow TRUD in Russian 11 Aug 81 p 1] 9512

CONTROL-ROOM SIMULATOR--Kiev--At the Tripol'skaya GRES near Kiev, scientists from the Institute of Automatics have created the country's first simulator for power engineers. Operators of electric station control panels will train on the simulator. The control panel of a modern electric power station consists of hundreds of indicators and sensors which promptly relay the most diverse types of information. For this reason, the operator of such a panel must have a heightened degree of attention and instantaneous reactions. In order to establish these qualities, future operators undergo a great number of different checks on their reaction speed, stability under stress and the quality of their memories. [Text] [Moscow TRUD in Russian 17 Jul 81 p 1] 9512

OVERLOAD PROTECTION FOR POWER LINE--The Ekibastuz-Urals electric transmission line will be reliably protected from overloads, even in the case of a direct lightning strike. Specialists from the Leningrad Elektrokeramika association have completed the manufacture of the first series-produced lightning arrester for this 1,150-kV alternating-current electric transmission line. [Text] [Moscow IZVESTIYA in Russian 2 Jul 81 p 6] 9512

CONSTRUCTION MATERIALS--Ali-Bayramly--About 20,000 cubic meters of reinforced-concrete products of various cross-section were sent to the Azerbaydzhanaskaya GRES, the Shamkhorskaya GES and the Red Star TETs by the collective of the Ali-Bayramly combine of subsidiary enterprises of the Azenergostroy trust. This exceeds the seven-month plan by 300 cubic meters. In the competition in honor of Builders Day, 220,000 rubles worth of industrial products were manufactured and realized. It was basically obtained by increasing the labor productivity. Socialist competition for the fulfillment of the tasks of the first year of the five-year plan has been extensively expanded. In the vanguard of labor competition are the collectives of the reinforcement shop and the first test range which exceed the shift quota

by 10 to 15 percent. The skilled reinforcement installers N. Ibragimov and N. Niftulayev, concrete workers G. Aliyev and S. Gasymov and crane operator M. Ibadova set the tone in the competition. [Text] [Baku VYSHKA in Russian 12 Aug 81 p 1] 9512

HIGH-POWER TRANSFORMER--Zaporozh'ye--The place was the large high-voltage room of the All-Union Scientific Research, Planning and Design and Engineering Institute of Transformer Construction. A mock-up of a 1,500-kV direct-current transformer is on the test bench. Units of similar capacity are not seen in practice. They are designed for the largest of the power industry's new construction projects--the superlong Ekibastuz-Center electric transmission line. "The fact of the matter is that the insulation in the transformers is subjected to many active external influences," said the director of the institute, Lenin Prize laureate I. Voyevodin. "The operating conditions for the equipment change frequently. This creates overloads that are brief in duration but nonetheless appreciable. The most dangerous enemy is lightning discharge. How do new products behave under the influence of this menacing natural phenomenon? All this is checked during the course of testing. The Zaporozh'ye high-voltage complex has given a start in life to many supertransformers which have no peer in modern electrical engineering. They are being used to equip practically all of this country's powerful thermal, hydraulic and atomic electric power stations. [Text] [Kishinev SOVETSKAYA MOLDAVIYA in Russian 22 Jul 81 p 3] 9512

CSO: 1822/217

MINISTER OF GEOLOGY SAYS PROSPECTING, EXPLORATION ARE TO BE EXPANDED

Moscow PRAVDA in Russian 6 Aug 81 p 2

[Article by USSR Minister of Geology Ye. Kozlovskiy: "The Geological Potential"]

> [Text] Our country has been exploring its strong minerals raw-materials base, the existence of which has supported accelerated development of the mining industry. At the same time an analysis indicates that requirements for the most important types of raw materials will increase. It is necessary to prepare for this in good time. Therefore, right now, in the 1980's, the goal is being set of creating a base from which we will enter the coming century.

The growing requirement for useful minerals poses for geologists the task of intensifying exploration work. Along with the preparation of "new" raw-materials bases, it is also necessary to make up also the loss at depleted deposits. Many complicated tasks connected with creating bases for producing mineral fertilizer in the eastern regions and with developing resources for Siberia's energy-intensive raw-materials remain to be solved.

The "Main Directions" for the country's economic and social development established the task of providing for accelerated development of work on a geological study of the earth's depths. During the 11th Five-Year Plan it is planned to complete a geological survey of the whole territory of the USSR on a moderate scale and to increase the study of it on a large scale. An integrated study of the earth's crust also is to be intensified by means of deep holes and geophysical methods.

A prerequisite to the solution of all national-economic tasks, it was pointed out at the 26th CPSU Congress, is the development of heavy industry and its main branches, primarily the fuel and power branches. The necessity for reducing the share of oil as a fuel and for replacing it with gas and coal, the more rapid development of nuclear power and hydroelectric power, and continuation of the search for basically new sources of energy was noted. Because of this, the importance of Siberian gas is increasing. The recovery of gas and oil in West Siberia and the transporting of it to the European part of the country are most important parts of the energy program of the 11th Five-Year Plan. The question of producing synthetic liquid fuel based on Kansk-Achinsk Basin coal is being studied.

The search for oil and gas is being intensified not only in West and East Siberia but also in the Caspian depression and in Uzbekistan and Turkmenia. The further development of geological exploration in West Siberia is of special significance. The high concentration of the resources and of explored reserves at large fields has caused them to be developed at an unprecedented rate. In less than 15 years this region has been transformed into the country's main oil-recovery base. By the end of the 11th Five-Year Plan the recovery of oil and condensate here will comprise more than 60 percent of the All-Union total. Many complicated problems must be solved if the effectiveness of the work in West Siberia is to be increased. Along with prospecting and exploration of the traditional fields, an evaluation is to be made of the prospects for the petroliferousness of new types of fields and of the possibility of extracting oil from intricately structured deposits. In East Siberia a major improvement of the complex of geophysical and geochemical methods for prospecting is of great importance.

In order to fulfill the program for growth of explored oil and gas reserves, it is planned to increase deep drilling 1½-fold and to double it in West Siberia. This in and of itself poses a complicated problem, which cannot be solved without an intensification of geological exploration and growth in labor productivity.

The contemplated growth of coal's share in the country's energy balance sets before geologists the task of increasing exploration for coal reserves, primarily in the more promising regions of Siberia, the Far East and Kazakhstan. In the Kuzbass the reserves of coking coal and of steam coal suitable for strip mining will be greatly increased. In the Kansk-Achinsk Basin, the development of which is one of the major power-engineering problems, it is planned to prepare the reserves of explored sections for the erection of supercapacity strip mines and to study the raw materials with a view to obtaining products for chemical conversion at an accelerated pace. In the South Yakutia Basin, the development of which has become possible because of construction of the BAM [Baykal-Amur Mainline], a huge base for developing coking coal which can meet the requirements of future metallurgical centers in the country's east is being created at an accelerated pace.

The fuel and energy requirements of the country's European portion are to be satisfied to a great extent through shipments from Siberia, Kazakhstan and Central Asia. Because of this, the prospecting for and exploration of oil and gas fields in the Timan-Pechora province and the Urals-Volga region, of coal in the Donbass, the Pechora Basin and the Urals, and of fuel shale in the Volga region and in the country's Northwest are being speeded up.

Still another important task for geologists is expansion of the raw-materials base for the production of mineral fertilizers. In order to solve the foodstuffs problem, an increase in exploration for reserves of phosphorites, apatites and potash salts is of great importance. This is why we are to explore fields quickly not only in the European area but also in Siberia, the Far East and Central Asia.

We will also increase still more the raw-material reserves for ferrous and nonferrous metallurgy, the chemical industry and the construction industry. It is planned to increase the explored reserves for iron ore for existing metallurgical enterprises in regions of the Krivbass [Krivoy Rog Basin], the KMA [Kursk Magnetic Anomaly], the Urals, Siberia and Kazakhstan. In the BAM zone, the preparation of raw materials will continue in the Chara-Tokko and Yuzhnyy Aldan regions. Geologists have been called upon to prospect more actively for aluminum, copper, lead, zinc and tin deposits.

Our country's bowels contain substantial potential reserves of mineral raw materials. However, the discovery of new deposits is becoming increasingly complicated. Therefore, it is necessary to increase sharply the amount of geological exploration and the depths of prospecting for and exploration of deposits and to concentrate this work in the main areas. An indispensable condition to increasing the effectiveness of the work done is the anticipatory development of fundamental and applied scientific research, the improvement of methods for prospecting, exploration and the economic evaluation of fields, and the wide use of geophysical, geochemical and high-altitude aerial and space equipment. In order to solve successfully the tasks of accelerated development of work on the geological study of the country and to increase mineral raw-material resources, the existing practice of coordinating the work of the Ministry of Geology and the USSR Academy of Sciences will be further developed.

The Ministry of Geology has basically completed realization of the measures called for by the master scheme for managing the branch, and definite experience has been gained. Right now the main thing--using this experience--is to raise the work effectiveness of the associations. The branch's productive potential has risen substantially in recent years. However, the necessity for intensifying geological operations always will be first in priority. One of the main prerequisites for successful solution of these problems is a strengthening of the influence of the economic mechanism on raising the effectiveness of operations. Much work has been done in the branch to improve the planning and the economic indicators of the organizations' activity, to create a system of scientifically substantiated standards, to strengthen cost accounting at all levels of management, and to improve economic incentives. But nevertheless it must be recognized that not everywhere is the new economic mechanism being introduced sufficiently energetically and operating with precision. At all levels of management it is desirable that psychological barriers and the attachment to old ways be overcome more boldly and that the principles of the new economic mechanism be introduced more actively.

Our branch has set the target of reequipping geological organizations more quickly with highly effective equipment and modern apparatus and transport equipment. Attention is being increasingly devoted to improving living and working conditions for the explorers of the depths.

In recent years much has been done to master discovered fields, which are of enormous importance to the development of the country's productive forces. Let us recall, for example, the previously unprecedented pace of the assault on West Siberia and the rapid development of the Noril'sk mining-industry region. At the same time, many explored fields, among which are no few large fields with high-quality ores, go undeveloped for long periods. In our opinion, when developing the master scheme for siting productive forces, it is important to examine the strategy of drawing into industrial development mineral resources that have been discovered, indicating the deadlines for the construction of mining and processing enterprises. In so doing, the dates should be determined by taking into account the forming of regional production complexes.

Much attention was paid at the 26th CPSU Congress to the thrifty use and saving of material resources, which should include mineral resources. Rational use of them is predetermined by the degree of integration of the geological study of the deposits. Accordingly, in recent years deposits have been explored to take into account the determination and calculation of reserves, both of the main components and of incidental components. The scientific-research institutes of the Ministry

of Geology and branch-of-industry ministries are creating new methods for extracting associated useful minerals and are developing highly effective wastefree technologies for concentrating and processing raw materials. This will not only free enterprises of wastes but it will create conditions for better preservation of the environment.

Advanced enterprises of the Ministry of Nonferrous Metallurgy--the Ust'-Kamenogorsk, Noril'sk, Balkhash and other combines--have begun to use mineral resources in a more integrated fashion. In the Krivoy Rog Basin the problem of using oxidized iron-bearing quartzites has been solved, greatly expanding the raw-materials base for ferrous metallurgy. Overburden rock is being used as a construction material at many enterprises.

However, the effectiveness and degree of integration of use of mineral raw materials does not always meet modern requirements. Large losses are still being tolerated during the mining and processing of useful minerals. Such valuable associated components as ethane, propane, butane and gas condensate still are not being extracted from oil and gas in adequate amounts. During the processing of iron ores, copper, cobalt and vanadium often are lost. The copper-pyrite ores of the Urals are not being used satisfactorily. Only the sulfur is being extracted from the pyrite concentrate of these ores, and the so-called pyrite cinders, which contain gold, silver, copper and iron, go to the dump. Although in recent years raw material losses have been reduced through the expansion of open-pit mining methods, losses are still great at many enterprises.

For a number of useful minerals, losses during concentration and processing of the raw material are substantial. A reduction in the level thereof through the introduction of progressive upgrading systems is a substantial reserve for preserving our mineral wealth.

The writeoffs from the inventories of explored useful-mineral reserves that the mining ministries are executing inflict considerable harm on the mineral raw-materials base. This is being done in accordance with existing statutes, but often also in violation of them. The amounts of the writeoffs of reserves approved by USSR GKZ [State Commission for Useful Mineral Reserves] that are being permitted are unjustifiably high. In our opinion, these should be reexamined with a view to making a substantial reduction.

The growing demand for mineral raw materials should be satisfied not only through the introduction into operation of new targets but also through deeper, fuller and more rational use of the fields being developed. Our party calls upon us to do this.

11409
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NEW MEASURES FOR IMPROVING GAS SERVICES IN RSFSR SUGGESTED

Moscow EKONOMICHESKAYA GAZETA in Russian No 31, Jul 81 p 17

[Article by G. Osipova, deputy chief of Glavgaz [Main Administration for Gas Services] of RSFSR MZhKKh [Ministry of Housing and Municipal Services], and Ye. Rytova, chief of the Economic Analysis Division of Orggaz [RSFSR Trust for the Setting-Up and Adjustment of Gas Equipment of Urban Gas Services] Administration: "The 'Blue Fuel' for Household Use"]

[Text] The conversion of the housing inventory to the use of gas has been developed unprecedentedly in recent years. Let us name these figures: In 1965 there were 5.5 million gas-using apartments in the Russian Federation, and in 1979 there were about 28 million. By the end of this year the level of gasification in the republic will reach about 80 percent in cities and workers' settlements but less than 80 percent in the countryside. Thousands of kilometers of gas pipelines are being erected, gas filling stations, centers for liquefied gas, and warehouses for gas-tank exchange are being built or rebuilt, and production bases are being strengthened.

Last year more than 170 billion cubic meters of pipeline gas and more than 2 million tons of liquefied gas were sold to RSFSR customers. The gas services of Voronezhskaya and Belgorodskaya Oblasts and the Dagestanskaya and Checheno-Ingushskaya ASSR's produced the greatest growth in services to the population and to municipal customers last year.

In introducing new equipment and advanced technology, the RSFSR's gas services obtained an economic benefit of more than 4 million rubles during the year. Through rational utilization, more than 200 million cubic meters of natural gas were saved.

When the Norms Are Violated

A feature of the work of the activities that sell gas is primarily uninterrupted service to the customers. This means that the equipment should regularly undergo preventive maintenance and inspection. At each administration, standards for the number of line personnel are being computed. But some administrations, in the pursuit of false labor productivity, permit violations. For example, the Udmurtgaz Administration reached a productivity that greatly exceeded the average level for the republic. It turned out that worker manning here was two-thirds that of other administrations with an approximately identical wage fund. In accuality,

because of the lack of personnel, the quality of operation at Udmurtia's gas services does not meet the requirements, since the dates for annual technical servicing of the gas equipment are being violated, there is no potential for regularly inspecting the underground gas-pipeline routes, and not everything is being done to protect pipelines from corrosion.

It is now 3 years that the new procedure for forming economic incentive funds has been in operation in the gas services. It is being called upon to strengthen the motivation of enterprises and organizations to provide a continuous emergency-free supply of gas to customers and to provide for the rational use of gas fuel. Such indicators as profit and total income have been excluded from the approved indicators, since the predominant portion thereof is a function of the ceilings on gas that has been allocated and not of the results of the work done. These indicators are assigned to the computing indicator category. In determining the standards for deductions into the material incentive fund, the ratio of the fund-forming indicators has been changed--up to 90 percent of the gain of income from the populace and from municipal and household-services enterprises. Such a ratio has permitted the influence of the "profit" indicator to be reduced to a minimum and, simultaneously, a strengthening of the role of the indicator, "income from the population and from municipal and household-services enterprises," which depends directly upon the workers themselves and the specialists of the gas activity.

However, the standards for deductions in some cases were reviewed without taking into account the growth in amounts of conversion to gas and the corresponding increase in manning. As a result, the increase in economic incentive funds in such activities proved to be substantially below the original norm. Thus, for the Murmanskoblgaz Administration the material incentive fund was lower in 1979 than the baseline norm by 5.6 percent, and the incentive funds proved to be so insignificant that they could not play a considerable role in raising the effectiveness of the services' workers.

The republic's gas services have already completed work on conversion to the new wage system. As a result, the average wage of workers has been raised 15-20 percent. In order to improve work organization and to raise work effectiveness, the existing norms for output per person were revised in the direction of an increase on the average by 12 percent. Conversion to the new system was executed partially through subsidy from the budget, and also through internal reserves of the services, an acceleration of labor productivity growth, and a reduction in the labor intensiveness of the work.

Problems associated with economic substantiation and correctness in the use of prices and schedules for gas and for services extended to the populace and to organizations occupy an important place in the economic-planning activity of enterprises. Such questions as the status of agency monitoring of the gas-services administrations, the effectiveness of measures for insuring state discipline in the use of prices at subordinate enterprises, and the existence of prices and schedules for gas and for services that are approved in the established procedure should be kept in mind.

In most gas-services administrations, work on the supervision of price lists has been set up. Prices for all types of services are now being approved by kray and oblast ispolkoms and ASSR councils of ministers, whereas previously certain prices for services that were being extended to enterprises were approved by administration chiefs, which was a violation of the procedure established for price-setting.

A number of new factors has now arisen which affect seriously development of the conversion to gas and the supplying of gas to the republic's economy and its populace. Because of the concentration of large enterprises of the petrochemical, chemical, machinebuilding, metallurgical, power-engineering and other branches of the naticnal economy within autonomous republics and oblasts, the responsibility for supplying gas to them reliably through the gas-supply system of the local soviets has greatly increased.

What the Experiment Indicated

Glavgaz of the RSFSR Ministry of Housing and Municipal Services has done definite work to improve the management structure of the branch. By way of experiment, production associations were created to support the gas services of autonomous republics, krays and oblasts (in the Tatarskaya, Bashkirskaya, Udmurtskaya, Chechen-Ingushskaya and Dagestanskaya ASSR's and in Voronezhskaya and Bryanskaya Oblasts). The forming of associations will enable the creation of a unified system for operating the republics' gas services for the region as a whole, regardless of agency subordination, a rise in the level of operation of the gas services of rural regions by the forces of specialized enterprises, and organization of the centralized overhaul of gas equipment and machines, mechanisms and other equipment and the provisioning of materials and spare parts. In considering the positive work experience of the associations that have been created, it is desirable during the current five-year plan to complete conversion of the gas services of the Russian Federation to a new organizational structure of management, that is, to organize a single republic Rosgaz Association.

Incentive for Savings

One of the unsolved problems is the lack of proper incentives on the part of gas services workers in the matter of making economical use of gas fuel. Gas-marketing enterprises are, in practice, the final element in gas supply for all categories of consumers. Therefore, the functions of accounting for and monitoring gas consumption are being vested in the gas-services administration. Until now, however, a source of incentives for workers to save gas has not been defined.

In order to provide for savings of power-engineering resources and to motivate gas-services workers to make such savings, the RSFSR Ministry of Housing and Municipal Services proposes that above-plan profit which is obtained through additional gas sales be used as a source for augmenting the resources of the fund of material incentives for saving gas by reducing losses.

Where the gas services have introduced technical measures for rational gas consumption, it is desirable that the profit obtained from doing this type of work, which is done mainly in accordance with agreements, be used as a source for augmenting the resources of funds for saving gas in industry, municipal and household organizations and so on. Unfortunately, our recommendations still have not found practical solution.

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OIL PIPELINE OPERATORS NOT BEING SUPPORTED ADEQUATELY

Moscow PRAVDA in Russian 11 Aug 81 p 2

[Letter from Sh. Akhatov, chief of the Urals-Siberian Trunk Oil Pipeline Administration (Ufa): "The Support System Should Be Tightened Up"]

[Text] Our collective services thousands of kilometers of underground pipelines, which transport about half of all the oil recovered in the country. In recent years three strands of the transcontinental Ust'-Balik-Kurgan-Ufa-Al'met'yevsk and Nizhnevartovsk-Kurgan-Kuybyshev oil pipelines have been turned over for operation. The pumping of the "black gold" had by the end of 1980 grown 2½-fold in comparison with the Ninth Five-Year Plan. The prime cost of transferring stock was reduced by almost a third. The quality of the crude improved appreciably.

The 11th Five-Year Plan has opened up new horizons for pipeline transport. Comrade L. I. Brezhnev said in the CPSU Central Committee Accountability Report to the 26th congress: "The recovery of gas and oil in West Siberia and the transporting thereof to the European part of the country are to be made most important elements of the energy program of the 11th, yes, and also of the 12th, Five-Year Plans."

Aside from the erection of new capacity, questions of the effective use of existing arterials are acquiring paramount importance. The administration's collective is doing much to supply oil to the national economy with regularity. Last year, thanks to the introduction of organizational and technical measures, we were able to exceed the design capacity of both transcontinental pipelines by 5-7 percent. This is, of course, a small increase. But the underground pipelines, which carry energy, heat and light to the people, can and should operate more effectively. What prevents an accelerated introduction of reserves into action?

One of the important factors is the unintegrated erection of pipelines. Our activity is a complicated operation which, more often than not, is located far from inhabited places. Therefore, as never before, repair-operations bases, reserve tanks, reliable communications systems, equipment with high off-the-road capability, and, of course, well-appointed housing, hospitals, schools and kindergartens are necessary here. All this is, as a rule, incorporated in the designs for the construction of the arterials, and the necessary appropriations are being allocated. But the construction subunits of Minneftegazstroy [Ministry of Construction of Petroleum and Gas-Industry Enterprises] and Minnefteprom [Ministry of Petroleum Industry] at times leave the erection of these facilities "until better times." Thus, the Ust'-Balik-Kurgan-Ufa-Al'met'yevsk oil pipeline was turned over for

operation almost 10 years ago, yet many families of servicing personnel still are living in the mobile units of temporary settlements. It is no accident that experienced specialists have begun to leave us.

Up until this year, 176 million rubles' worth of facilities for subsidiary production and for housing and for public purposes still had not been built. Tank farms still are not being erected. Meanwhile, their introduction would enable the transport workers to improve the quality of the raw material. Even today there is still not one storage tank at the Yurgamysh and Nurlino oil-pumping stations on the Nizhnevartovsk-Kuybyshev pipeline. This hampers accounting for the stock that is pumped and places refineries in a difficult position when we are conducting emergency and precautionary operations on the arterials.

Or take the Ust'-Balik-Al'met'yevsk route. Not by far have all the fire-fighting structures been erected there, and the construction of 14 communications junctions, 11 repair-operations bases, 7 boilerhouses and many other facilities has been disrupted. At the pump stations, 60 apartment houses, 8 schools and hospitals, and 5 clubs have not been turned over.

The same thing is also being observed this year. Minneftegazstroy, Minenergo [Ministry of Power and Electrification] and Mintyazhstroy [Ministry of Construction of Heavy Industry Enterprises] trusts and other organizations have failed the task for introducing new facilities during the first two quarters. It would seem that the planning organs that authorize the builders to transfer from job to job without punishment are greatly to blame here. Most surprising is the fact that construction subunits are counted among the advanced activities. They cover up the nonfulfillment of plans in our rubles with overfulfillment in other places. The total overall result makes them winners. It is time to put an end to this. Contractors should be required to turn over facilities by sets in accordance with the budget estimates and the lists of construction-project titles. In evaluating the work of construction subunits, main administrations and ministries should consider plan fulfillment not in totals or as a whole but specifically by customer, that is, by itemized job list.

The concern of the transport workers is even more understandable. Many pipelines were accepted for operation in haste, with work uncompleted. How is a break in the pipe to be eliminated without disrupting the state plan for pumping and without causing harm to the environment? How to arrange for recreation and for feeding people?

Poor technical supply of transport workers is the second serious cause of poor productivity of underground arterials. The administration is not being supplied adequately today with motor cranes and pipelayers, excavators and bulldozers.

The series output of domestic equipment for servicing oil pipelines under complicated conditions is being organized slowly. The development and mastery of production of new types of special machines for pipeline-route workers are being drawn out. Meanwhile, the prime scientific-research institute for pipeline transport (VNIISPTneft' [All-Union Scientific-Research Institute for Special Preparation of Crude Oil for Transport]) has developed extremely original experimental models of stripping excavators, equipment for digging under objects, and insulating and cleaning mechanisms. But their series production still has not been arranged. Because of this I would like to ask USSR Gosplan to accelerate the erection in the

city of Belebey of the plant for special mechanisms and special equipment for repairing and servicing large-diameter pipelines.

Pipelines are one of the most economical means for transporting oil and gas, and the future is for them. It is our duty to do everything possible to see to it that the fuel arterials operate reliably and effectively.

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PROGRESS IN DRILLING FROM SEMISUBMERSIBLES IN CASPIAN DESCRIBED

Baku VYSHKA in Russian 11 Jul 81 p 2

[Interview with Subkhi Gasanovich Magerramov, director of Kaspburneftegazprom [Caspian Oil and Gas Field Drilling Association], by V. Gol'tsev: "Ever Farther to Sea"]

[Text] The technical base for superdeep drilling in the Caspian is being strengthened.

Since July of this year the offshore exploratory drilling administration that was created within the Kaspburneftegazprom production association system has begun to operate with specialized engineering equipment. This includes 6 floating drill rigs, which enable wells up to 6,500 meters deep to be drilled in waters 70-200 meters deep.

What tasks will this collective execute during the 11th Five-Year Plan, and where are the exploratory operations to be promoted? Subkhi Gasanovich Magerramov, director of the Kaspburneftegazprom production association tells VYSHKA's correspondent about this.

"Creation of the new subunit," he said, "coincided with the start of preparatory work for the drilling of wells on the semisubmersible floating drill rig 'Kaspmorneft',' which, as is known, dropped anchor at the promising Area imeni 28 Aprel', where water depths reach 140 meters. The collective under Afgan Guseynovich Khalilov and Vitaliy Borisovich Vesilov is carrying out carefully and, the main thing, with technical competence, all the startup and setting-up work, and in a couple of days here they will start drilling over of the sea bottom with the lowering of the first guide string. This operation, as we are told, is the beginning of the beginnings. Prospecting hole No 9 had been put down to a depth of 4,200 meters prior to the drilling-in of the Kalinskaya Suite, whose petroliferousness in this part of the Caspian still has not been determined with precision.

"The PPBU [semisubmersible floating drill rig] 'Kaspmorneft'' is the fifth operating rig in a row. 'Shel'f-1,' by means of which the drilling of hole No 5 at this structure will be started, is to go to a geological 'point' in September. Simultaneously with this, the construction of still another 'Shel'f,' numbered '2,' will be completed at the shipyard in Astrakhan' on order of the Ministry of Gas

Industry. I think that the Astrakhan' shipbuilders are coping with the job successfully and are providing for transfer of the rig to a previously prepared site at Baku this fall, prior to the close of the navigation season. And in the fourth quarter of next year the administration will be augmented by another 'Kaspiy'-series rig.

"The flotilla of floating equipment will be augmented still more. By the end of the 11th Five-Year Plan, 13 floating drill rigs, mainly of domestic production, will be operating in various parts of the Caspian, and by 1990 the number will rise to 23.

"As you see, the technical equipping of the administration will be sound, and this will enable the task of speeding up the exploration of new oil and gas deposits in the deepwater part of the Caspian Sea, which was set by the party and the government, to be solved more successfully. This means primarily the Structure imeni 28 Aprel', where high-production oil gushers have already been obtained. After that, in an easterly direction, the Areas imeni Kaverochkin, Promezhutochnaya, imeni 26 Bakinskikh Komissarov, and Shakhovo-Offshore will follow.

"Much business lies ahead. And the competition that is being promoted among the collectives for rational use of equipment, for savings, and for a reduction in expenditures will help, it goes without saying, in achievement of the main mission. This will persuade each driller to persistently bring existing reserves into operation. A good example is the collective of the "Baky" rig. Last month the brigade of drilling foremen Anatoliy Prokof'yev and Viktor Artyunov, for the first time in offshore deep-hole drilling practice, successfully lowered an intermediate casing string 508 millimeters in diameter to a depth of 1,415 meters. This enabled unstable rock, which previously had complicated penetration of the holes, to be covered over. The advanced experience became the property of other collectives. In a couple of days a similar string was also lowered satisfactorily from the floating drill rig '60 let Azerbaydzhana.'

"The storming of the earth's depths goes on day and night. Each meter of penetration costs people much labor. And so it is difficult to conceive of the drillers' work without supply being arranged with precision. Kaspneftegazflot [Caspian Sea Oil and Gas Fleet] ships, primarily the high-powered 'Araks' and 'Samur' tugs, which were built in Norwegian shipyards, have been coping well with this task. They do not have sailing restrictions, they easily transfer semisubmersible rigs to new 'points,' and they deliver fuel, cement, pipe and equipment--all that is necessary for uninterrupted work by the drillers.

"Good conditions for people's work and recreation have been created on the floating drill rigs. The people have at their disposal comfortable cabins, dining rooms and showers.

"The association's party and trade-union organizations are paying great attention to questions of increasing the effectiveness of socialist competition and of making correct use of moral and material incentives for work.

"The successful execution of the semisubmersible task," said S. Magerramov in conclusion, "inspires assurance that the explorers of the earth's depths of the newly created subunit will cope with honor with the responsible tasks that they are charged with."

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DELIVERY OF MODERN MINING EQUIPMENT DELAYED

Kiev RADYANS'KA UKRAYINA in Ukrainian 30 Jun 81 p 2

[Article by L. Alekseyeva, I. Dmytrenko, and N. Novoselov, special correspondents]

[Text] Last year our production association ordered 32 BU-1 drilling installations. The Ministry of the Coal Industry of the republic did not have funds to fill that order and therefore planned to deliver only 14 installations to us. A year has passed and we have not received any. Things are not better this year. Only 10 installations have been promised to the association, although we need at least 65 for the successful work of tunneling teams.

In the first year of the new Five-Year Plan the coal-mining teams must mine more than 7.5 million tons of coal. To fulfill the tasks the tunnelers have pledged to progress more than 100 kilometers of stripping and preparatory mining work. But we can assure such a front of work only if we are equipped with the machinery...

V. Pavlov, tunneler team leader of the shaft imeni Izotov, "Artemvugillya" Production Association

Last year we worked on seams 0.80-0.82 meter thick, with a pitch angle of 12-15 degrees, and operated an IMK-97D mechanized complex. The mechanism seemed suitable as a standard size but there were more than a few difficulties with it. Now we have moved on to another seam. All because under the complex mining-geological conditions the complex does not endure the loading. In particular, the rams must be strengthened; metal was used which would "not be contorted" under mine pressure. It would not do any harm for the designers to think also about improving the covering. Its coefficient (0.57) does not meet the requirements of the work and the complex conditions. All this is reflected in the coal production. Under our conditions 450-500 tons must be produced, and we are producing 150. There are also observations on the "Donbas" complex: extensive console upper parts are very often damaged by the cutting parts of the combine, especially if the conditions become more complicated. Let the designers and machine-builders think how to overcome these shortcomings. And still another matter.

Miners have very little means of so-called small-scale mechanization. For some kinds of underground work they have none at all. It is especially important for the timberers to work at once. I will speak no more of other auxiliary and important work which cannot be dispensed with at the shaft.

V. Sauck, field team leader of Section No 7, "Voroshylovgrads'ka" shaft No 1, "Voroshylovgradvugillya" Association

1. You Have Not Been Born... You Have Grown Old

Let not the simplifications and narrowings of the claims of miners of V. Pavlov and V. Saukh, addressed to scientists, designers and machine-builders, seem too much to the reader.

Unfortunately, it must be said that the new mining technology obtained by the branch for equipment in the final hour, although deserving of every kind of praise, still does not solve the problem of complete mechanization and automation of mining work, especially at great depths, on steeply dipping and thin seams, that is, under the conditions of very large-scale coal mining in the long term.

If you refer to the average statistical data, the situation is as it were already alarming. At shafts and other enterprises of the branch, as designated in one of the documents of the Ministry of the Coal Industry of the republic, in the course of the last Five Year Plan more than 420 scientific and technical developments were approved and 95 tasks were developed on new technique and progressive technology. The saving will amount to 170 million rubles. And, what is more, the volume of preparatory developments conducted by combines has almost doubled and the level of coal mining from completely mechanized faces has risen by one fourth. The automation of stationary installations and complexes on the surface has practically been completed. Thanks to this, as the same document testifies, the level of heavy manual labor has been reduced by 3.5 percent and 23,000 workers have been released for other work.

During the same time mechanized KM-87P and KM-88 complexes have been introduced for use on thin sloping seams, shields for steep seams 0.7-1.2 meter thick, complexes for seams up to 1.4 meter thick, for the mechanized sketching of workings, apparatus for the seismoacoustic prognosis of eruption danger and a number of other technical means. The technology was created by the collective of the Donetsk Scientific Research Institute of Coal ("Donvugi") and "Dondiprovuglemash", the "Avtomatgirmash" and "Vuglemekhanizatsiya" scientific research associations, many other scientific and scientific-design institutes and institutions of higher education of Donetsk, Voroshylovgrad, Dniepropetrvsk and Khar'kov, machinery plants of those cities, and also of Gorlovka, Druzhkovka, Yasynuvataya...

The gain, it seems, is perceptible. It could be approved if it were not for some cases.

One of these could be to cite incompleteness of the realization of thoughtfulness. Let us say, the good, necessary ANSh shield unit for shafts of the Central Donbas region was created by the designers of "Donvugi" and "Dodiprovuglemash" in the

collective of the Gorlovka Machinery Plant imeni Kirov. At the shaft imeni Lenin of the "Artemvugillya" Association its average daily productivity was more than 1,170 tons--the indicator for Gorlovka cannot be seen. And look at the difficulty: the high productivity of the aggregate cannot be utilized, for it does not have a direct drilling installation for equipment of the coal faces; the method of their reinforcement also has remained a blank spot in the ANSh operating technology. In practice such incompleteness is transformed into huge above-quota labor expenditures and a deficit of thousands of tons of coal. But the collective of the Gorlovka section of "Donvegi", which was charged with removing the gap, in the meantime proceeds no further with experiments and generalizations.

One cannot help but be put on the alert by the fact that among the quantity of items of mining technology which are being given a start and the quantity of series-produced examples of it present at the shafts there are far from the correlations dictated by the needs of coal production. The mechanisms are being made in units, at better times in tens, although at times there is need for hundreds of them. We will speak of this later.

In this section reports are now presented on the development and introduction of new mining equipment which is started by traditions "but..."

Although in the past Five Year Plan the influence of technical progress on mining work has grown rapidly, it has lagged behind what was outlined by the plan. It did not attain the indicators envisaged by the Five Year Plan for mechanized mining of coal, preparatory work done by combines and the growth rates of labor productivity. The cost of production of a ton of fuel has increased. The main indicators have not been realized for elevation of the technical level of shaft construction and coal preparation. It appears that among them are a great many which are directly related to the matter raised by the authors of the quoted letters.

The equipment, it appears, starts from scientific substantiations and design developments which in general are embodied in the working drawing and the prototypes of new machines. As regards the coal industry of the country, on this level it has an especially powerful base--tens of scientific research and planning and design institutes and scientific production associations, to say nothing of academic institutes and other educational institutions which also are attracted to the development of mining themes. Every year the state allocates over 12 million rubles just for scientific-research and planning and design developments implemented by establishments of the UkrSSR Ministry of the Coal Industry and on its order.

Unfortunately, allocation is not always equivalent to installation. In the last Five Year Plan, as was disclosed by V. Shamayev, chief of the section of scientific-research organizations and analysis of the effectiveness of introduction of new Technology of the Ministry of the Coal Industry of the republic, only one fourth of the already completed scientific developments was transferred for introduction into mining production. Where is the rest? A portion is in the stage of operational development, some are being debated, for the proposals are not effective enough, and developments with a total value of over 2.3 million rubles have proven to be be completely unnecessary. In the largest scientific research institute of the Ministry of the Coal Industry, of 277 completed developments, only 58 were transferred for introduction.

In a number of organizations called in to contribute to scientific and technical progress at the shafts, we have become acquainted with graphs of the advancement of mining technology, that is, from the drawing board to the coal mine. Bright and multicolored, they surprise by the varieties of colors, and not by precise, accelerated rates. On the embodiment of technical tasks they are drawn out for a period of 3-4 years, experimental and production introduction and correction before putting "in series" in such graphs for some reason are delimited unfailingly by a distance of 1-2 years. As if it cannot, as if it does not have a need for corrections in a new machine to be made simultaneously with production trials.

In statements of the 26th CPSU Congress in "Main directions of the economic and social development" is formulated the need to accelerate the development and organization of series production of highly productive complexes for coal mining under complex mining and geological conditions and the conducting of preparatory workings, and also automated means of coal mining without the constant presence of people in the stopes. The number of stopes and shafts with complex mining and geological conditions in the republic is increasing all the time. Moreover, the short-range prospects of many coal regions are linked with the working of thin and super-thin seams (according to the computations of specialists, those seams include 60 percent of the real coal reserves of the Donbas, of which one third are organized today). That's why the creation of machines new in principle and the development of a technology for coal extraction not using labor is not only a technical but a social problem.

Two have been more or less completed and several more machines now being planned will be proposed to the miners by designers in this Five Year Plan. The "more or less completed" are the IKM-103 mechanized complex of the Moscow "Diprovuglemash" institute and the KD-80 of "Dondiprovuglemash," designed for the working of seams 0.70-0.75 and 0.80-0.82 meter thick respectively. The two complexes according to the plan already must be in the stage of pre-series readiness. Therefore because of all sorts of disagreements the IKM-103 is found at the shafts of the "Yasynivka-Glyboka" Association of "Makiyivvugillya", the shaft imeni Lenin of "Rostovvugillya" and the "Stepova" shaft of the "Pavlogradvugillya" Association with a delay of a year, and the KD-80, at only one enterprise, was at the shaft imeni 60th Anniversary of the Soviet Ukraine of the "Lysychans'kvugillya" Association with a 2-year delay. And the production of considerably imporved models of that machine, which must prove themselves under complex geological conditions, have just started operating at the "Mius'ka" shaft of the "Torezantrasyt" Association and the "Ternivs'ka" shaft of the "Pavlogradvugillya" Association. Series production, it appears, is still far off. However, if one is honest, these new machines are not novelties: they are nothing more than improved modifications of mechanisms which appeared at the faces as long as 15 years ago.

At one time "Donvugi" created an original design of an unattended mining complex, the KBV. Shaft tests of it were conducted, and suddenly the institute designers became less enthusiastic about the need for new things. In the last Five Year Plan the collectives of "Dondiprovuglemash", "Donvugi" and the "Avtomatgitmash" Scientific Production Association had the task of creating the KG complex for coal extraction in steep seams 0.6-1.0 meter thick. The deadlines were put off until 1988.

The solution of problems of scientific and technical progress in the coal industry is not being taken up actively enough by the collectives of institutes of the Academy of Sciences and other educational institutions of the republic. Although the

total amount of scientific research work on mining subjects done by the institutes of the UkrSSR Academy of Sciences in the last Five Year Plan almost doubled in comparison with the Ninth Five Year Plan, their useful yield, as a rule, was lower than that attained by the branch institutes. In the last five years the developments of academic institutes of the coal industry have given a saving of 1,764,000 rubles, but the yield per ruble of expenditures was 59 kopecks. Comments here are superfluous.

Already in the first stage, from the drawing board to the prototype, the path of new mining equipment, it would appear, is full of surprises. Ahead is series production, the emergence to underground working space. But that will be discussed in the next article.

2174
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BRIEFS

MOTORS FOR DEEP OIL WELLS--At the Khar'kov Electrical Machinery Plant the manufacture of the first large lot of new motors for electric pumps has been completed ahead of schedule. These compact motors, which are narrow, oblong cylinders, are lowered into a well through the casings directly to underground lakes of natural raw material. There they can operate continuously for years. This is especially valuable, for example, for the oil-field workers of marshy Tyumenskiy Kray, where such pumping units can be delivered and replaced sometimes only in winter. The collective of the enterprise which created something new in collaboration with the scientists--the metallurgists and chemists of Moscow, Zaporozh'ye and Dnepropetrovsk, used heat-resistant insulation and high grades of steel in this motor and assured a more precise system of hydraulic protection against the deposit liquid pressure. Before the end of the year the plant will make thousands of such motors [Text] [Kiev RADYANS'KA UKRAYINA in Ukrainian 30 Jun 81 p 2] 2174

CSO: 1811/63

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